



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/534,438 | 05/10/2005 | Akihiro Morikawa | 10873.1702USWO | 4795 |
| 52835 | 7590 | 12/06/2007 | EXAMINER | |
| HAMRE, SCHUMANN, MUELLER & LARSON, P.C. | | | KIANNI, KAVEH C | |
| P.O. BOX 2902 | | | ART UNIT | PAPER NUMBER |
| MINNEAPOLIS, MN 55402-0902 | | | 2883 | |
| MAIL DATE | | DELIVERY MODE | | |
| 12/06/2007 | | PAPER | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|------------------------------|------------------------|---------------------|--|
| | 10/534,438 | MORIKAWA ET AL. | |
| Examiner | Art Unit | | |
| Kianni C. Kaveh | 2883 | | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 05 September 2007.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-7 and 11-16 is/are rejected.

7) Claim(s) 8-10 is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 15 March 2007 is/are: a) accepted or b) objected to by the Examiner.

 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. ____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ .

5) Notice of Informal Patent Application (PTO-152)

6) Other: ____ .

DETAILED ACTION

Allowable Subject Matter

Claim 8-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 8 allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein a distance L1 between the first groove and the second groove satisfies $1 \text{ mm} < L1 < L/2$, where L denotes a length of the optical waveguide device in combination with the rest of the limitations of the base claim.

Claims 9-10 are allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein a third groove is formed at the surface of the sub-mount at a region corresponding to the outgoing end side of the optical waveguide device, the third groove being formed parallel to the second groove and being positioned between the second groove and the incident end face of the optical waveguide device in combination with the rest of the limitations of the base claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-7 and 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. (US 6371664).

Regarding claims 1, Takahashi teaches a laser module (shown in at least fig. 14), comprising: a substrate 1; a semiconductor laser 7 secured to a surface of the substrate 1; and an optical waveguide device 3 joined to the surface of the substrate 1 by an adhesive layer 40 so that the optical waveguide device is coupled optically with the semiconductor laser 7, wherein a first groove 35 is formed at the surface of the substrate 1 at a region corresponding to an incident end side of the optical waveguide device 3, the first groove 35 being formed parallel to an outgoing end face of the

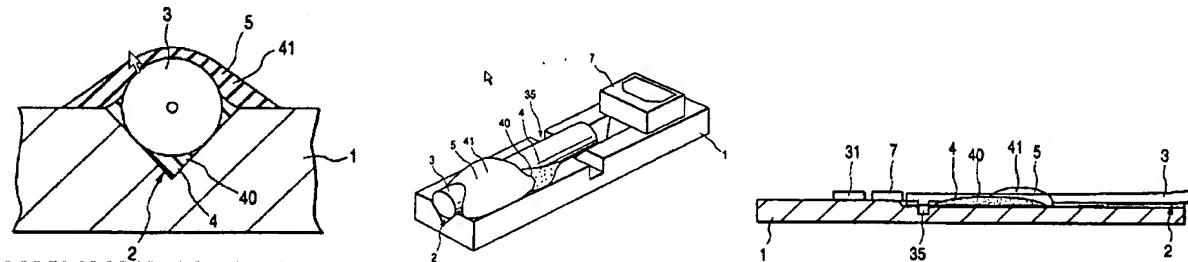


Figure 9c,

Figure 8 or 15

Figure 14

semiconductor laser 7 with a predetermined space therefrom, and the adhesive layer 40 is formed so that an end portion of the adhesive layer on the incident end side of the optical waveguide device is positioned inside of the first groove so as to adhere to a surface of a wall of the first groove under the optical waveguide device and does not contact with the outgoing end face of the semiconductor laser (see at least fig. 9b-c, 8 and 14-15; wherein the 2nd embodiment is similar to the 1st embodiment with regard to adhesive layer 40, shown in fig. 9c above, except to the portion 5 which is not relevant to the claimed invention, col. 17, 3rd parag.).

However, Takahashi does not explicitly teach wherein the above substrate is a sub-mount and that wherein a length L of the optical waveguide device satisfies $L > 10$ mm and wherein the optical waveguide device is a quasi-phase-matched second harmonic generation (QPM-SHG) device. It is obvious/well-known to those of ordinary skill in the art when the invention was made that a substrate for mounting/supporting item modules is/known as a sub-mount and that although Takahashi states that various segments o the module is in several 100 microns, but considering the size of the module as shown in at least fig. 4, would approximately in about 10 mm or larger nevertheless, it is obviously it is more challenging to have a smaller in size module than a larger one, use a conventional QPM-SHG (such as that the one admitted by applicant as prior art shown in fig. 13 of the specification and/or drawing) and since such size and support item would provide information processing apparatuses and light

sources for optical communication (col. 1, lines 17-20) and that a change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

Takahashi further teaches wherein a distance D between the outgoing end face of the semiconductor laser and a proximal end of the adhesive layer satisfies $0 \text{ mm} < D < 0.2 \text{ mm}$ (see at least col. 8, 4th parag. and fig. 8, wherein the size between the laser and the groove/adhesive is microns); wherein the adhesive layer is provided partially at one position close to an incident end face of the optical waveguide device (shown in at least fig. 8); wherein the adhesive layer is provided partially at least at two positions, close to an incident end face of the optical waveguide device and close to an outgoing end face of the optical waveguide device (see at least fig. 7); wherein a second groove is formed at the surface of the substrate at a region corresponding to an outgoing end side of the optical waveguide device, the second groove being formed parallel to the outgoing end face of the optical waveguide device, and the adhesive layer close to the outgoing end face is provided along the second groove (see at least fig. 18, item 2 as a first groove and item 60 as a second groove, both are considered as parallel to the outgoing end face of the optical waveguide device 3 and see col. 18, lines 37-41 and col. 20, lines 28-37); wherein an area of the adhesive layer close to the incident end face is larger than an area of the adhesive layer close to the outgoing end face (shown in at least fig. 14); wherein a third groove is formed at the surface of the substrate at a region corresponding to the incident end side of the optical waveguide device, the third groove being formed parallel to the first groove and being positioned

between the first groove and the outgoing end face of the optical waveguide device (see at least fig. 18, item 2 as a first groove and item 60 as a third/second groove, both are considered as parallel to the outgoing end face of the optical waveguide device 3 and see col. 18, lines 37-41 and col. 20, lines 28-37); wherein a thickness T1 of the optical waveguide device satisfies $T1 < 1$ mm (wherein the fiber/waveguide is in microns); wherein a width W of the optical waveguide device satisfies $W < 0.85$ mm (wherein the fiber/waveguide is in microns); wherein a thickness T2 of the substrate satisfies $T2 < 0.3$ mm (in fig. 1, see the diameter of the fiber 3 and thickness of the substrate 1 and see col. 12, 4th parag. being less than .15 mm); wherein the optical waveguide device is an optical fiber 3.

Response to Arguments and Amendment

Applicant's argument filed on 09/05/07 have been fully considered but they are not persuasive.

Regarding applicant's assertion that Takahashi does not teach the adhesive layer is positioned inside of the first groove so as to be in contact with a surface of a wall of the first groove and does not contact with the outgoing end face of the semiconductor laser. The Examiner responds that indeed Takahashi teaches the adhesive layer 40 is formed so that an end of the adhesive layer on the incident end side of the optical waveguide device is positioned inside of the first groove so as to be in contact with a surface of a wall of the first groove and does not contact with the outgoing end face of the semiconductor laser (see at least fig. 9b-c and 14-15; wherein

the 2nd embodiment is similar to the 1st embodiment with regard to adhesive layer 40, shown in fig. 9b-c, except to the portion 5 which is not relevant to the claimed invention; see col. 17, 3rd parag.).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kianni C. Kaveh whose telephone number is 571-272-2417. The examiner can normally be reached on 9:30-19:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

K. Cyrus Kianni
Primary Patent Examiner
Group Art Unit 2883


K. CYRUS KIANNI
PRIMARY PATENT EXAMINER

December 4, 2007
